



## MAJOR DECISIONS: WHAT GRADUATES EARN OVER THEIR LIFETIMES

BY BRAD HERSHBEIN AND MELISSA KEARNEY  
THE HAMILTON PROJECT

### Appendix 1: How to Interpret the Numbers

It may be tempting to take these earnings estimates and say that if person X switched from say, psychology to chemistry, she would increase her lifetime earnings by more than \$300,000. However, that would not be quite correct. The numbers presented in analysis represent the earnings that people report, and while we observe the major of college graduates, we do not necessarily observe other individual features that can affect earnings. In fact, earnings differences across majors are driven by many factors, including:

1. *Academic aptitude and preparation of students entering and graduating from the major.* The patterns of high school grades, standardized test scores, rigor of classes, and even attendance and disciplinary episodes all vary among the students who choose different majors. Economists call this selection. Since [research](#) shows that these characteristics influence earnings independent of major, [some of the earnings differences](#) stem from students' attributes and not the majors themselves.
2. *The majors available at colleges of different levels of selectivity.* Not all colleges and universities offer the same set of majors to choose from, and some majors, such as economics or physics, are far more prevalent at highly selective schools. If selective colleges convey an earnings premium to their graduates independent of students' pre-college characteristics—about which there is an ongoing [academic debate](#)—then earnings differences across majors may be due in part to college selectivity differences.
3. *Labor force attachment.* The graduates in some majors are more likely to work full-time and throughout the year than graduates in other majors. More generally, the total number of hours worked can vary, and this influences annual earnings. These differences in labor force attachment could be due to choices of the worker, such as a parent who prefers a part-time, flexible work schedule, or they could be due to different risks of unemployment and underemployment. There is an option to examine only full-time year-round workers, which reduces the impact of this factor on earnings differences, but this cannot disentangle how much of the earnings differences are driven by the preferences of workers and how much are driven by the preferences of employers.
4. *Employer demand for certain skills.* Employers are willing to pay more for the skills associated with some majors than they are for others. This factor alone, if one could hold the other three factors fixed, corresponds to the wage return of different majors. If it could be isolated, it would answer the question of how much money a typical individual would make in different majors, working at the same intensity in each one.

The U.S. Census Bureau's American Community Survey, the sources of the data, provides rich detail and is large enough to estimate earnings over the career for eighty majors. However, it does not allow us to separate how much of the earnings difference we observe are due to each of the four factors above. As such, the estimates are not meant to and cannot distinguish *why* graduates in certain majors earn more than those in others.